



## NASA STTR 2005 Phase I Solicitation

### T9.02 Integrated Life-Cycle Asset Mapping, Management, and Tracking

Lead Center: SSC

To support NASA's need for reliable and low-cost asset management in all of its programs including Earth-based activities, robotic and human lunar exploration, and planning for later expeditions to Mars and beyond, the Earth Science Applications Directorate at Stennis Space Center seeks proposals supporting NASA's requirements for asset management. With proper physical infrastructure and information systems, identification tags should allow any item to be tracked throughout its life cycle. When combined with Earth and lunar GIS, and related supporting documentation, any significant asset should be located, through time and space, as well as organization. Starting with programmatic requirements and design data, assets would be tracked through manufacture, testing, possible launch, use, maintenance, and eventual disposal. Innovative technology and information architectures should integrate and visually map infrastructure, assets, and associated documentation with the ability to link to program structure, budget, and workflow. Innovative solutions will facilitate information flow between the various NASA Centers and Programs. The system must maintain signature authority and restrict unauthorized moves. Ideally, if fully implemented, any remote item could be actively located throughout the NASA system with minimal delay. Any tagged item should be able to be queried at its location to retrieve associated records, e.g., maintenance, inspection, configuration management, chain-of-custody, engineering specifications, etc. A simple operator interface would provide "finger-tip knowledge" about the asset. It should be possible to provide secure access to this information for both domestic and international partners. The proposed solution will minimize capital cost and human work effort required for inventory and tracking of nonconsumable assets while exceeding the performance of current systems. Note that tagged assets may be subject to extreme environments in space and on Earth.

The innovation may eventually interoperate with a holistic information system, and may not preclude other uses for a terrestrial and lunar GIS such as:

- Operational infrastructure support AM/FM (automated mapping / facilities management);
- Asset and resource management, including waste disposal;
- Lunar landing and facility site selection, and optimization;
- Conceptual site infrastructure and layout design;
- Surface navigation;
- Emergency response information; and

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- A comprehensive portal for Earth and lunar mapping data, both image- and vector-based.